



SUKUNA SECONDARY SCHOOL

Sundarharaincha-10, Morang

FIRST TERMINAL EXAMINATION-2080

Class: XII

Full Mark: 40

Subject: Physics (1021)

Time: 1.5 Hours

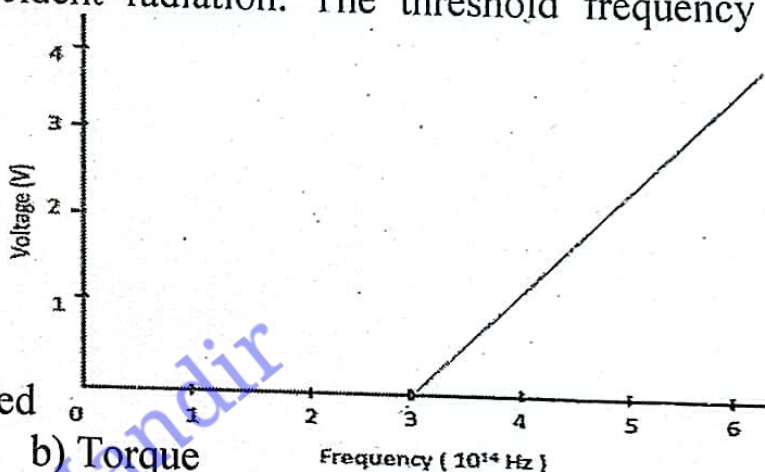
Candidates are required to give their answers in their own words as far as practicable. The figures in the margins indicate full marks.

Group 'A'

[7×1=7]

Rewrite the correct options of each question in your answer sheet.

1. For the photoelectric effect in sodium, the figure shows the plot of cut-off voltage versus frequency of incident radiation. The threshold frequency is



- a) 1×10^{14} Hz
b) 2×10^{14} Hz
c) 3×10^{14} Hz
d) 4×10^{14} Hz
2. The moment of momentum is called
a) Couple
b) Torque
c) Impulse
d) Angular momentum
3. The temperature of inversion of a thermocouple is 700°C and the neutral temperature is 365°C . Then, the temperature of cold junction must be
a) 0°C
b) 30°C
c) 35°C
d) 65°C
4. When a gas undergoes adiabatic expansion, its internal energy
a) Increases
b) Decreases
c) Remains same
d) None
5. Two waves are $y = a \sin(\omega t - kx)$ and $y = a \cos(\omega t - kx)$. Now, the phase difference between the two waves is
a) $\pi/2$
b) $\pi/4$
c) π
d) Zero
6. The emf of a battery A is balanced by a length of 75 cm on a potentiometer wire. The standard cell of emf 1.02 V is balanced by a length of 50 cm. The emf of a cell is
a) 1.25V
b) 1.35V
c) 1.53V
d) 2.05V
7. The efficiency of Carnot's Cycle is independent of
a) Working Substance
b) Temperature of Source
c) Temperature of Sink
d) All of Above

Group "B"

[5×5=25]

8. a) An electron and a proton enter in a transverse electric field with the same velocity. Which particle has more curved trajectory? Explain. 2

b) An electron moving with a speed of 10^7 m/s is passed into a magnetic field of intensity 0.1 T. What is the radius of the path of the electron inside the field? ($e/m = 1.8 \times 10^{11}$ C/Kg) 3

9. a) What do you mean by cyclic process? 1

b) How the heat and thermodynamic process is useful in our daily life? Explain. 1

c) A gas in a cylinder is initially at a temperature of 17° C and pressure 1.01×10^5 N/m². If it is compressed adiabatically to one-eighth of its original volume, what would be the final temperature and pressure of the gas? 3

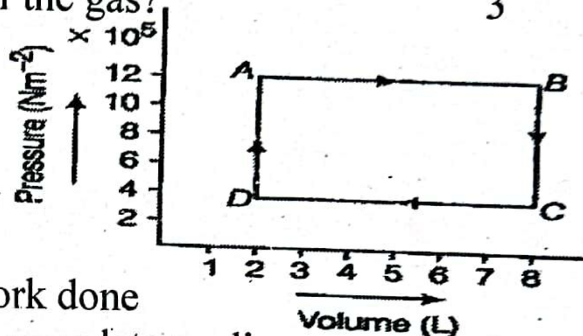
or

a) Spark plug is not necessary in a diesel engine. Why? 2

b) The figure on the right side represents the PV-diagram of different stages of

a thermodynamic process. Calculate the work done

in each stage and the net work done in the complete cyclic process. 3



10. a) What do you mean by rigid body? 1

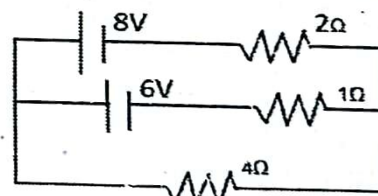
b) How does angular velocity differ from the linear velocity? 1

c) Derive an expression for the Moment of Inertia of a uniform rod about an axis through its centre and perpendicular to its length. 3

11. a) Why the connections between the resistors in a meter bridge are made of thick copper strips? 1

b) Why is it generally preferred to obtain the balance length near the mid-point of the bridge wire? 1

c) Calculate the potential difference between the 4Ω resistor in the given electrical circuit. 3



12. a) How transverse wave is different from longitudinal wave? 1

b) Derive the Newton's formula for the velocity of sound. 2

c) What correction was made by Laplace? Explain. 2

P

13. a) Draw the magnetic field lines for the current carrying solenoid. 1

b) State and explain the Biot and Savart law. 2

c) Use this law to calculate the magnetic field at the centre of a current carrying circular coil. 3

d) A 60 cm long wire of mass 10 gm is suspended horizontally in a transverse magnetic field of flux density 0.4 T through two springs at its two ends. Calculate the current required to pass through the wire so that there is zero tension in the springs. 2

"GOOD LUCK"

Sukuna Secondary School

Sundarharaincha-10, Morang

Compulsory English (Eng. 003)

First Terminal Examination-2080

Grade-12

Time: 1.5hrs

F.M. 40

1. Read the passage carefully and answer the following questions (10)

How to stay fit, happy and healthy

If you've been listening to the news you already know about our national obesity levels rising by the day. It has never been more important to watch what you are eating and to get an adequate amount of exercise and sleep to keep yourself fit and healthy. Though it may feel like really hard work at first, once you adopt an exercise routine and start to adapt to a new situation, you'll forget you ever did things differently. Here are the top four-top adjustments you could make up.

Sleep is huge and almost a third of the US population doesn't get near enough to help them stay. Physically and mentally healthy. If you are sleep deprived, try changing your habits in order to get a full eight hours every night. Look at what you're eating now and make changes where you see fit. If you are susceptible to snacking, keep a piece of fruit or a few nuts at hand. The key is to eat small meals throughout the day. Reduce portion sizes, remove white bread and replace with whole grains and make sure each meal contains at least one portion of fruit and - or vegetables. Healthy food doesn't have to be expensive in the least bit, and you can get an abundance of low priced fruit and veggies, like apples, bananas, potatoes and peas.

Take a look at your current lifestyle and make a small list of everything you do that is not good for your health. This could be anything, from eating too much junk food or drinking too much caffeine, to smoking or drinking. Start the process of breaking these habits one by one. Some will be easy, while others may take months or maybe years to get rid of and eradicate completely from your life, but the sooner you start fighting, the better.

Some addictions (like smoking, drugs or alcohol) are incredibly bad not only to your health, but also to your pocketbook. If you smoke and/or drink, start by cutting back on how many drinks you have, or cigarettes you smoke, in a day, and

if necessary, seek medical advice and assistance to make further steps towards stopping completely.

We all should be doing at least 30 minutes of exercise, 3 to 4 or more times a week, to maintain good health and keep fit. This can be pretty much anything that is physical, like walking, cycling, running, swimming to weightlifting, etc. This too does not have to be expensive, and you can get a great work out without joining any costly gyms. Most of these exercises are inexpensive, and just doing a cardiovascular exercise, like walking, jogging, or walking on at treadmill a few times a week will do your body (and heart) good.

✓ **A. Complete these sentences by filling appropriate word in the blank.** $5 \times 1 = 5$

- a. Disadvantaged people are of social justice.
- b. Nepal is a naturally rich country. In fact, it has an of natural resources.
- c. Older people with medical complications are to Covid-19.
- d. I have made a few to the design to give the shirt a new look.
- e. It took me seven hours to complete the task. It was difficult.

B. Answer the following questions.

$5 \times 1 = 5$

- a. What percentage of the US population get enough sleep to stay healthy?
- ✓ b. Why is healthy food not always expensive?
- ✓ c. What is the best way to get rid of bad habits?
- ✓ d. Why do you think an addiction like smoking is worse than snacking on junk food?
- e. What type of exercise is good for your heart?

2. Write short answers to the following questions.

$3 \times 2 = 6$

- a. Why were the people in the neighborhood surprised at role of the young man and his wife within their family? (Neighbors)
- b. Who are 'poor creatures'? Why does the speaker call them 'poor creatures'? (Every Morning I Wake)
- c. What favour does Earnest Young Woman ask from the Famous Actress? (A Famous Actress)

3. Give Long answer. (Any one)

$1 \times 4 = 4$

- a. Summarize the poem 'A Day' by Emily Dickinson.
- b. 'Marriage is a Social Institution.' Elucidate the statement with examples of your society.
5. Write a paragraph of the topic "Trend of Going Abroad and its Reasons". 4
6. Make a Press Release by a renowned company about its new product launch. 6

7. Do as indicated in the brackets and rewrite the sentences.

5x1=5

- a. Several of the students were absent yesterday. (Identify the word class of the underlined word.)
- b. The old man died a heart attack. (Put the correct preposition in the blank.)
- c. More than one person (be) going to find a new job. (Put the correct form of the verb in the blank.)
- d. You'll (has to/have to/must/had to) tell the police that your house was broken into. (Choose the correct option from the bracket to complete the sentence.)
- e. Somebody is following you, ? (Put correct Tag)

8. Choose and copy the correct answer.

5x1=5

- a) Which one of the following words has a different final sound?
i) brushed ii) glanced iii) looked iv) filled
- b) You went for a long run this morning. The word 'run' in this sentence is:
i) a noun ii) a verb iii) an adverb iv) an adjective
- c) Which one of the following words does not take the prefix 'Im'?
i) pure ii) fertile iii) moral iv) proper
- d) Which one of the following words comes between 'example' and exchange in the dictionary entry?
i) excavate ii) examine iii) excite iv) exclude
- e) The administration has officially asked transportation employees to.....their demonstration.
i) call on ii) call off iii) call at iv) call for

The End

Sukuna Secondary School

Sundarharaicha-10, Morang
First terminal examination-2080

Class-XII(Science)
Sub- Chemistry

Time-1.5 Hrs

F.M.- 40

Candidates are required to give their answer in their own words as far as practicable. The figures in the margin indicate full marks.

Attempt all the questions

Group-A

1x5=5

Rewrite the correct options of each questions in your answer sheet.

- Which of the following will not give Iodoform test?
a. Ethanol
b. Benzyl alcohol
c. Ethanal
d. Isopropyl alcohol
- Urotropine is used in medicine as a.....
a. Tranquillizer
b. Urinary antiseptic
c. Sulpha drug
d. Sedative
- Alcohol vapour can be dehydrated by passing over.
a. Conc. H_2SO_4
b. heated Al_2O_3
c. heated Cu
d. anhydrous $CaCl_2$
- When phenol is heated with phthalic anhydride & conc. H_2SO_4 the product is
a. plastic
b. dye
c. explosive
d. phenolphthalein indicator
- The first product of oxidation of a primary alcohol is
a. ketone
b. aldehyde
c. carboxylic acid
d. ester
- Ether can be used as
a. a refrigerant
b. a general anaesthetic
c. perfume
d. all
- Blister copper is
a. ore of Cu
b. alloy of Cu
c. pure Cu
d. Cu containing 1% impurity

Group-B

5x5=25

Short answer questions

- Ethyl alcohol is common alcohol and is used to manufacture alcoholic beverage. It can be prepared from sugar containing materials like molasses by formantation process.

- a. What is fermentation? 1
 - b. What is the function of yeast in the formation of ethyl alcohol? 1
 - c. Write the chemical reaction for the conversion of cane sugar into ethyl alcohol. 2
 - d. Convert propan-1-ol to propan-2ol. 1
2. How can you distinguish 1° , 2° and 3° alcohols from Victor Meyer's method?
3. Write an example of each of the following. 5x1=5
- a. Dehydrohalogenation reaction
 - b. Friedel-craft alkylation reaction
 - c. Cannizzaro's reaction
 - d. Aldol condensation reaction
 - e. Coupling reaction
4. Compound 'A' is the primary alcohol that gives positive iodoform test. On heating compound 'A' with bleaching powder gives sweet smell of compound 'B'.
- a. Identify 'A' and 'B' and write their IUPAC name. 1
 - b. What happens when compound 'A' is heated with alcoholic KOH? 1
 - c. Compound 'B' is stored in a dark brown bottle. Why? 2
 - d. Write the action of compound 'B' with acetone. 1
5. By using bromoethane, can you prepare symmetrical ether 'A' by Williamson's synthesis?
- a. Write the reaction involved. 1
 - b. What product is formed when 'A' is heated with excess of HI? 1
 - c. It is dangerous to boil old sample of ether stored for long time. Why? 2
 - d. Convert phenol into anisole. 1

OR

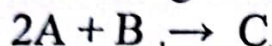
6. A carbonyl compound 'X' that gives iodoform test and can be obtained by oxidation of a monohydric alcohol containing three carbon atoms.
- a. Write down the structural formula of 'X'. 1
 - b. Give the functional isomer of 'X' giving IUPAC name. 1
 - c. How is 'X' prepared from 2,2-dichloropropane? 1
 - d. Convert 'X' into 2-methyl propan-2-ol. 1
 - e. Give a laboratory test of carbonyl compound.

Long answer questions

6. Define the terms.

- Activation energy
- Half life reaction
- Effective collision.

The following rate data were obtained from a reaction



Experiment	[A] molL ⁻¹	[B] molL ⁻¹	Initial rate of formation of C molL ⁻¹ sec ⁻¹
1	0.1	0.1	7×10^{-3}
2	0.3	0.2	8.4×10^{-2}
3	0.3	0.4	3.36×10^{-1}
4	0.4	0.1	2.8×10^{-2}

- Write the order with respect to A and B and also overall order of reaction.
- Find rate constant.
- Calculate the rate of formation of C when concentration of [A] and [B] are 0.6 molL⁻¹ and 0.3 molL⁻¹ respectively. [3+2+1+2=5]

OR

- Define the terms.
 - Normality factor
 - Molarity
- Differentiate between primary standard solution and secondary standard solution.
- At what condition normality becomes equal to molarity?
- Derive the relationship between normality and molarity.
- What is normal solution and molar solution.

सुकुना माध्यमिक विद्यालय

सुन्दरहरैचा-१०, मोरङ

प्रथम आन्तरिक परीक्षा-२०८०

कक्षा : १२

विषय कोड : ००२१

विषय : अनिवार्य नेपाली

पूर्णाङ्क : ४०

समय : १.५ घन्टा

- १) तलको अनुच्छेदमा रेखाङ्कित शब्दहरूको उच्चारण र अक्षर संरचना देखाउनुहोस् : २
हाम्रो विद्यालयमा अहिले मासिक परीक्षा धमाधम सञ्चालन भइरहेको छ । यसमा मैले पनि सक्रियतापूर्वक सहभागिता जनाइरहेको छु ।
- २) शुद्ध गरी पुनर्लेखन गर्नुहोस् : २
बाटामा एउटा रमणीय ठाउँ भेटियो । देब्रे पट्टि पर्खालले घेरेको ठिस्कामा राम्रो मन्दिर थियो, जसको छानाको मर्मत हुँदै थियो ।
- ३) तलको अनुच्छेदबाट एउटा पारिभाषिक शब्द र एउटा अनुकरणात्मक शब्द पहिचान गरी त्यसलाई प्रयोग गरेर एक एकओटा वाक्य बनाउनुहोस् : २
कार्यालयको बेरुजु रकम बढेपछि ऊ मानसिक अन्तर्द्वन्द्वमा फस्यो । त्यसपछि कार्यक्षेत्रबाट जुरुक्क उठेर सुटुक्क घरतिर लाग्यो ।
- ४) तलको अनुच्छेदबाट एउटा उखान र एउटा दुक्क पहिचान गरी एक एकओटा वाक्य बनाउनुहोस् : २
म त वाक्क दिक्क नै भइसकेँ, मेरो गोरुको बाह्र टक्का भनेभैँ अहिलेका मानिसहरू आफ्ना कुरामा ज्यादै अड्डी कस्छन् । लौन त भइहाल्यो अब सहमति गरौँ भनेर कसैले नम्रता प्रकट गर्‍यो भने पनि घुँडा टेक्नुको अर्थमा लिन्छन् । अब भने कानमा तेल हालेर बस्नुपर्ने भयो ।
- ५) तलका अनुच्छेदमा रेखाङ्कन गरिएका शब्दको पदवर्ग पहिचान गरी लेख्नुहोस् : २
गाउँमा एक जना बुढा रहेछन् । एक दिन उनलाई भेट्न अर्का बुढा मान्छे आएछन् तर भेट हुन सकेनछ । गाउँलेहरूले कठै ! विचराले दुःख मात्र पाए भनेछन् ।
- ६) तल दिइएका पारिभाषिक शब्दलाई शब्दकोशीय अनुक्रममा मिलाएर लेख्नुहोस् : २
राजश्व, अधिवक्ता, बेरुजु, अधिकत, परिपत्र, आदेश, अध्यादेश, भरपाई
- ७) तलको अनुच्छेदबाट एउटा उपसर्ग व्युत्पन्न र एउटा प्रत्यय व्युत्पन्न शब्द पहिचान गरी तिनको निर्माण प्रक्रिया देखाउनुहोस् : २
प्रत्येक वर्ष थुप्रै विदेशी पर्यटक नेपाल आउने गर्दछन् । प्राकृतिक दृश्यावलोकनका साथै उनीहरू यहाँको जातीय, धार्मिक, सांस्कृतिक र भाषिक विविधता देखेर गमक्क पर्छन् ।
- ८) तलको अनुच्छेदका वाक्यहरूलाई आवश्यक सुधारसहित सामान्य आदरमा परिवर्तन गर्नुहोस् : २
ऊ कक्षा १२ मा पढ्दै छ । ऊ अति नै परिश्रमी छ । उसकी एक बहिनी पनि छे । ऊ बहिनीलाई पनि पढ्न लेख्न सिकाउँछ ।
- ९) तलको अनुच्छेदका वाक्यहरूलाई सामान्यार्थकमा बदल्नुहोस् : २
तिमी आफ्नो क्षमतालाई सिर्जनशील काममा लगाऊ । तिमी जहिलेदेखि मैले भनेको कुरा मानौता र गरौला त्यसपछि सुखी पनि होउला ।
- १०) तलका ४ वटा सरल वाक्यहरूलाई दुई वटा मिश्र वाक्यमा परिवर्तन गर्नुहोस् : २
म पहिलो पटक पोखरा गएँ । म अत्यन्तै रमाएँ । तपाईँ प्राकृतिक सुन्दरतामा रमाउन चाहनुहुन्छ । तपाईँ एक चोटि पोखरा पुग्नुहोस् ।
- ११) तलको अनुच्छेद पढी चारवटा बुँदा टिपोट गर्नुहोस् र त्यसैका आधारमा एक तृतीयांशमा सारांश लेख्नुहोस् : २×२=४
(हाम्रा वरिपरि रहेका सबै थरीका बोटबिरुवा, रुख लहरा, घाँसपात आदिलाई बुझाउने साभा नाउँ वनस्पति हो) । नेपाल भौगोलिक विविधता भएको देश हुनाले यहाँ फरक फरक किसिमको हावापानी छ र सोहीअनुसार यहाँ विभिन्न किसिमका वनस्पति पाइन्छन् । नेपालका तराई, भावर, दुन र चुरे क्षेत्रमा उपोष्ण प्रदेशीय सदावहार जङ्गल छ । (समुन्द्र सतहदेखि एक हजार दुई सय मिटरसम्मको उचाइमा)

रहेको जङ्गल नै उपोष्ण प्रदेशीय सदावहार जङ्गल हो । यो ज्यादै घना हुन्छ । एक हजार दुई सय मिटरभन्दा माथि करिब दुई हजार एक सय मिटरसम्मको उचाइमा उम्रने रुखबाट बनेको जङ्गललाई समशीतोष्ण पतझर जङ्गल भनिन्छ । यो पहाडी जङ्गल हो । यो त्यति बाक्लो हुँदैन । समुद्री सतहबाट तीन हजारदेखि चार हजार मिटर उँचो भूभागमा पाइने वनस्पतिलाई लेकाली वनस्पति भनिन्छ । हिमालको तल्लो भूभाग र केही होचो धरातलमा यस्ता वनस्पति पाइन्छन् । (समुद्री सतहबाट चार हजार मिटरभन्दा उच्च भागमा पाइने वनस्पतिलाई हिमाली वनस्पति भनिन्छ) । यस्ता वनस्पति रहने ठाउँको तापक्रम वर्षभरि नै शून्य डिग्री सेल्सियसभन्दा पनि न्यून हुन्छ ।

१२) अनुच्छेद पढी सोधिएका प्रश्नहरूको उत्तर दिनुहोस् :

आजको विश्वमा मानव अधिकार भन्ने कुरा अपरिहार्य विषय बन्न पुगेको छ । यसको अभावमा मान्छेको वैयक्तिक विकास सम्भव छैन । मानव अधिकार कुनै एउटा व्यक्ति वा राज्यको मात्र सरोकारको कुरा होइन । यसको सम्मानमा संसारका हरेक व्यक्ति, समाज र राज्यको सहयोग आवश्यक हुन्छ तापनि आफ्नो मुलुकमा मानव अधिकारलाई सम्मान गर्ने परिपाटी कायम गर्ने कि नगर्ने भन्ने विषय भने त्यस मुलुकको राज्य व्यवस्था वा सरकारमै निर्भर गर्दछ । यस अर्थमा मानव अधिकारको सम्मान गर्न र त्यसलाई सुदृढ पार्न सरकारको नै सबैभन्दा महत्त्वपूर्ण भूमिका रहन्छ । जहाँ मानव अधिकारको सम्मान हुँदैन त्यहाँ प्रजातन्त्र पनि हुँदैन । जहाँ प्रजातन्त्र हुन्छ त्यहाँ मानव अधिकारको सम्मान हुन्छ । मानव अधिकारको सम्मानका लागि प्रजातान्त्रिक संविधानअनुसार स्थापित हुने सरकारको कार्यशैली पनि प्रजातान्त्रिक हुनु पर्दछ ।

प्रश्नहरू :

क) मानव अधिकार के का लागि अपरिहार्य मानिएको छ ?

ख) मान्छेको वैयक्तिक विकास भन्नाले के बुझिन्छ ?

ग) मानव अधिकारको सम्मान कसको सरोकारको विषय हो ?

घ) प्रजातन्त्र र मानव अधिकारको बीचमा कस्तो सम्बन्ध छ ?

१३) कुनै एक प्रश्नको उत्तर दिनुहोस् :

क) तपाईंले आफ्नो घर निर्माणका लागि सुन्दरहरैँचा-१० निवासी राधेश्याम खतिवडाका छोरा रामप्रसाद खतिवडाका नाति वर्ष ३५ का नवीन खतिवडाबाट मिति २०८० साल असोज १९ गतेका दिन मासिक ब्याज सयकडा रु. २१- का दरले एक वर्षभित्रमा साँवा ब्याज एकमुष्ट बुझाउने गरी रु. ३००,०००/- अझेरपि तीन लाख रुपैयाँ ऋण लिनुभयो; यसको नमुना तमसुक लेख्नुहोस् ।

ख) नवआगन्तुक विद्यार्थीहरूका लागि विद्यालयले भर्खरै सम्पन्न गरेको 'स्वागत कार्यक्रम-२०८०' को विषयलाई समेटी एउटा छोटो प्रतिवेदन तयार पार्नुहोस् ।

१४) तलको कयाश पढी सोधिएका प्रश्नको उत्तर लेख्नुहोस् :

२×२=४

कालोनिलो आकाशमा उत्तरतिर ध्रुवतारा त्यसको दाहिनेतिर साततारा र देब्रतिर पाँच ताराका उज्याला तारामण्डलले तिनलाई मोहित तुल्यायो । पूर्वदेखि पश्चिमतिर केही दक्षिणतिर ढल्किएको आकाशगङ्गा दमयन्तीका दृष्टिमा सङ्गीतमय हुन थाल्यो । आकाश र पृथ्वी यस्ता सुन्दर छन् । तिनका बिच आफू एकली विरहिणी अवस्थामा अनुभव गरेर दमयन्ती कोमल मधुर स्वरमा वियोग र पीडाको गीत गाउन थालिन् । कति बेरसम्म तिनले गीत गाइन्, तिनले आफैँ थाह पाइन् । आकाशमा बिस्तारै बिस्तारै उध्रिएर आउँदै पातला वादलले त्यो सुन्दर आकाशलाई दमयन्तीका हृदयमा धूमिल तुल्याउँदै लग्यो ।

प्रश्नहरू :

क) माथिको अनुच्छेदमा कस्तो परिवेशको चित्रण गरिएको छ ?

ख) आकाश र दमयन्तीको हृदयका बिच के समानता छ ?

१५) 'दुर्व्यसनमुक्त समाजको निर्माणमा युवाको भूमिका' शीर्षकमा २०० शब्दमा नघटाई एउटा निबन्ध लेख्नुहोस् :

--- समाप्त ---



Sukuna Secondary School

Sundarharaincha-10, Morang

First Terminal Examination-2080

Grade: XII

Time: 1.5 hrs

F.M: 40

Subject: Computer Science (4281)

P.M: 14

Candidates are required to give their answers in their own words as far as practicable.
The figures in the margin indicate full marks.

Group 'A' (Multiple Choice Questions)

Attempt all questions

[6×1=6]

1. Tick the best alternatives.

- a. _____ cable can transmit data in higher rate than _____ cable.
- i. Twisted pair ; Coaxial ii. Coaxial ; Fiber-optic
iii. Coaxial ; Twisted pair iv. Twisted pair ; Fiber-optic
- b. Which of the following IP address is wrong?
- i. 10.144.1.0 ii. 127.1.1.1
iii. 192.168.0.1 iv. 256.2.5.76
- c. What will be the output of the program code?
- ```
Void main(){ char str1[25]="sukuna", str2[25]="school";
strcat(str2,str1); printf("%s",str2);}
```
- i. school    ii. sukunaschool  
iii. schoolsukuna    iv. sukuna
- d. The feature of OOP in which object of one class acquire the feature of object of another class is \_\_\_\_\_.
- i. Encapsulation    ii. Data abstraction  
iii. Inheritance    iv. Polymorphism
- e. Requirement collection methods include \_\_\_\_\_.
- i. interview    ii. questionnaire  
ii. survey    iv. all of the above
- f. Which one is not the major type of ecommerce?
- i. B2C    ii. C2B  
iii. C2C    iv. B2B

### Group 'B'

Give short answer to the following questions.

[4×5=20]

2. Compare Client-server architecture and Peer-to-Peer architecture. [5]
3. What is IoT? Write its three advantages and disadvantages. [2+3]

OR

Explain the six Vs of big data. [5]

4. Differentiate between OOP or event-driven program and POP or structured programming language. [5]

- ✓ 5. Explain the agile software development methodology in brief. [5]

**Group 'C'**

**Give long answer to the following questions.**

**[2×7=14]**

- ✓ 6. Explain the twisted pair cable and fiber optic cable. Which of the network cable is suitable to design star topology in the school's network? Justify. [4+3]
- ✓ 7. WAP to ask computer mark of 20 students and display all the marks greater than 80 using array. [7]

**OR**

WAP to read the elements of two matrices of order 3×3 and perform the matrix addition.

**-Best of Luck-**

Note Mandir



# SUKUNA SECONDARY SCHOOL

Sundarharaincha-10, Morang

## FIRST TERMINAL EXAMINATION-2080

Class: XII

Full Mark: 40

Subject: Mathematics

Time: 1.5 Hours

Candidates are required to give their answers in their own words as far as practicable. The figures in the margins indicate full marks.

### Group 'A'

[5×1=5]

Rewrite the correct options of each question in your answer sheet.

1. In how many ways 'r' letters be posted in 'n' letters box ( $n \geq r$ )

- a.  $n \times r$       b.  $n^r$       c.  $\frac{n!}{r!}$       d.  $\frac{n!}{(n-r)!}$

2. Using L Hospital rule what is the value of  $\lim_{x \rightarrow 0} \frac{2(e^{2x}-1)}{\log(1+x)}$

- a. 1      b. 2      c. 3      d. 4

3. The length of latus rectum of parabola  $x^2 = 12y - 16$  is

- a. 16      b. 12      c. 6      d. 3

4. The nth term of series  $2 + (2+4) + (2+4+6) + \dots$  is

- a. n      b. 2n      c.  $n(n+1)$       d.  $\frac{n(n+1)}{2}$

5. If the sides of a triangle are in the ratio 2:2:5 then the triangle is

- a. isosceles triangle      b. equilateral triangle  
c. obtuse angle triangle      d. no such triangle can be formed

### Group "B"

[5×3+4=19]

6. a. What is the coefficient of  $x^6$  in the expansion of  $(3x^2 - \frac{1}{3x})^9$  [2]

b. Express an exponential  $e^{-x}$  infinite series. [1]

c. If  $(1+x)^n = c_0 + c_1 x + c_2 x^2 + \dots + c_n x^n$ . Then, prove that

$$c_0 c_2 + c_1 c_3 + c_2 c_4 + \dots + c_{n-2} c_n = \frac{2n!}{(n-2)!(n+2)!} \quad [2]$$

7. a. In how many ways can the letters of the word 'LOGIC'

- be arranged so that (i) The vowel may occupy odd position?  
(ii) No two vowel are together? [2]

- b. From 6 gentleman and 4 ladies a committee of 5 is to be formed. In how many ways can this be done so as to include at least 3 ladies? [3]
- 8.a. By using principle of mathematical induction, prove that  $(n + 3)^2 \geq 2n + 7$  [2]
- b. If  $\frac{1}{a+c} + \frac{1}{b+c} = \frac{3}{a+b+c}$  show that  $C=60^\circ$  [2]
- c. State the tangent law. [1]
9. Using row equivalent method solve the following linear equations  $2x+y-z=9, 3x-y+2z=-1, 4x+y-3z=17$  [4]

### Group "C"

[2×8=16]

- 10.a. Water flows into an inverted conical tank at the rate of  $42 \text{ cm}^3/\text{sec}$ . When the depth of water is 8 cm, how fast is the level rising? Assume the height of the tank is 12cm and the radius of the top is 6cm. [4]
- b. Find the derivative of  $y = \tan^{-1}(\tanh \frac{x}{2})$ . [2]
- c. Find the point on the circle  $x^2 + y^2 = 16$  at which tangents parallel to y-axis. [2]
- 11.a. Show that the line  $\frac{x}{a} + \frac{y}{b} = 1$  will tangent to the circle  $(x - a)^2 + (y - b)^2 = r^2$  if  $\frac{1}{a^2} + \frac{1}{b^2} = \frac{1}{r^2}$  [2]
- b. Find the equations of common tangents to parabolas  $y^2 = 4x$  and  $x^2 = 4y$ . [3]
- c. Find the coordinates of Centre, vertices, foci, eccentricity, equation of directrix, length of latus rectum of conic section.  $9x^2 - 16y^2 + 36x + 32y - 124 = 0$  [3]

!!! Best of luck !!!